

What Is Claimed Is:

1. A plasma display panel driving device for driving, in accordance with picture signals, a plasma display panel, in which a plurality of discharge cells supporting display pixels are arranged in a matrix, comprising:

resetting means for generating a resetting pulse for causing the occurrence of a reset discharge, which initializes each of said discharge cells to one of either an light-emitting cell state or a non-light-emitting cell state, and applies the resetting pulse to each of said discharge cells;

pixel data writing means for applying to each of said discharge cells a scanning pulse for causing the occurrence of a selective discharge, which selectively sets said discharge cells to either said non-light-emitting cell state or said emission-cell state in accordance with pixel data corresponding to said picture signals;

emission sustaining means for applying to each of said discharge cells a sustaining pulse for causing the occurrence of a sustain discharge, which causes light to be emitted repeatedly only from said discharge cells that are in said light-emitting cell state;

a light sensor for detecting an ambient illuminance of said plasma display panel; and

resetting pulse waveform adjusting means for adjusting the level change rate at the leading edge portion of said resetting pulse in accordance with said illuminance.

2. The plasma display panel driving device according to Claim 1, wherein the level change at the leading edge portion of said resetting pulse is gentler than the level change at the leading edge portion of said scanning pulse and said sustaining pulse, respectively.

3. The plasma display panel driving device according to Claim 1, wherein, when an ambient illuminance of said plasma display panel is low, said resetting pulse waveform adjusting means makes said level change rate smaller than a level change rate set when the ambient illuminance is high.

4. The plasma display panel driving device according to Claim 1, wherein said emission sustaining means changes the number of times that said sustaining pulse is applied to each said discharge cell in accordance with an ambient illuminance of said plasma display panel.

5. The plasma display panel driving device according to Claim 4, wherein, when the ambient illuminance of said plasma display panel is low, said emission sustaining means makes the number of times that said sustaining pulse is applied to each said discharge cell smaller than when the ambient illuminance is high.

6. A plasma display panel driving device for driving, in accordance with picture signals, a plasma display panel, in which a plurality of discharge cells supporting display pixels are arranged in a matrix, having:

resetting means for generating a resetting pulse for causing the occurrence of a reset discharge, which

initializes each of said discharge cells to one of either an light-emitting cell state or a non-light-emitting cell state, and applies the resetting pulse to each of said discharge cells;

pixel data writing means for applying to each of said discharge cells a scanning pulse for causing the occurrence of a selective discharge, which selectively sets said discharge cells to either said non-light-emitting cell state or said emission-cell state in accordance with pixel data corresponding to said picture signals;

emission sustaining means for applying to each of said discharge cells a sustaining pulse for causing the occurrence of a sustain discharge, which causes light to be emitted repeatedly only from said discharge cells that are in said light-emitting cell state; and

a light sensor for detecting an ambient illuminance of said plasma display panel,

wherein said resetting means changes the number of times that said resetting pulse is applied to each of said discharge cells in accordance with said illuminance.

7. The plasma display panel driving device according to Claim 6, wherein, when the ambient illuminance of said plasma display panel is low, said resetting means makes the number of times that said resetting pulse is applied to each said discharge cell smaller than when the ambient illuminance is high.

8. A plasma display panel driving method for driving, in

accordance with picture signals, a plasma display panel, in which a plurality of discharge cells supporting display pixels are arranged in a matrix, comprising:

a pixel data writing step for applying to each of said discharge cells a scanning pulse for causing the occurrence of selective discharge, which selectively sets said discharge cells to either said non-emission state or said emission state in accordance with the pixel data of each of said display pixels corresponding to said picture signals;

a emission sustaining step for repeatedly applying to each of said discharge cells a sustaining pulse for causing a sustain discharge only in said discharge cells that are in said light-emitting cell state; and

an adjusting step for changing the number of said sustaining pulses per unit time applied to each of said discharge cells in said emission sustaining step in accordance with an ambient illuminance of said plasma display panel, and, in addition, for adjusting the pulse width of at the least one of said scanning pulse and said sustaining pulse.

9. The plasma display panel driving method according to Claim 8, wherein said adjusting step comprises a step for making the number of said sustaining pulses per unit time applied to each of said discharge cells in said emission sustaining step when said illuminance is low smaller than when the illuminance is high, and for widening the pulse width of at the least one of said scanning pulse and said

sustaining pulse.

10. A plasma display panel driving device for driving, in accordance with picture signals, a plasma display panel, in which a plurality of discharge cells supporting display pixels are arranged in a matrix, having:

pixel data writing means for applying to each of said discharge cells a scanning pulse for causing the occurrence of a selective discharge, which selectively sets said discharge cells to either said non-light-emitting cell state or said emission-cell state in accordance with the pixel data of each of said display pixels corresponding to said picture signals;

emission sustaining means for repeatedly applying to each of said discharge cells a sustaining pulse for causing a sustain discharge only in said discharge cells that are in said light-emitting cell state;

an external light sensor for detecting an ambient illuminance of said plasma display panel; and

adjusting means for changing the number of said sustaining pulses per unit time applied to each of said discharge cells in accordance with said illuminance, and, in addition, for adjusting the pulse width of at the least one of said scanning pulse and said sustaining pulse.

11. The plasma display panel driving device according to Claim 3, wherein said adjusting means comprises means for making the number of said sustaining pulses per unit time applied to each of said discharge cells when said illuminance

is low smaller than when said illuminance is high, and, in addition, for widening the pulse width of at the least one of said scanning pulse and said sustaining pulse.

12. A plasma display panel driving method for carrying out a display corresponding to input picture signals by causing a discharge to occur by repeatedly applying displaying pulses to each of said discharge cells of a plasma display panel comprising a plurality of discharge cells supporting display pixels, said method comprising:

an average brightness computing step for computing the average brightness of an image displayed in accordance with said input picture signals;

an illuminance detecting step for detecting an ambient illuminance of said plasma display panel; and

a driving step for computing an application frequency at which said displaying pulse is to be applied using a conversion function, which has said average brightness and said illuminance as parameters, and applying said displaying pulse to each of said discharge cells in accordance with said application frequency.

13. The plasma display panel driving method according to Claim 12, wherein said conversion function is expressed by superimposing a first conversion function for converting to an application frequency that makes said average brightness lower as said average brightness becomes higher, and a second conversion function for making said application frequency smaller as said illuminance becomes lower.

14. The plasma display panel driving method according to Claim 12, wherein the computing of said application frequency is carried out each frame period of said input picture signal.

15. The plasma display panel driving method according to Claim 12, wherein said conversion function achieves a fixed value said application frequency in a range in which said average brightness is lower than a prescribed brightness level.

16. The plasma display panel driving method according to Claim 15, wherein said prescribed brightness level becomes smaller as said illuminance becomes smaller.

17. A plasma display panel driving method for carrying out a display corresponding to input picture signals by causing a discharge to occur by repeatedly applying displaying pulses to each of said discharge cells of a plasma display panel comprising a plurality of discharge cells supporting display pixels, said method comprising:

an average brightness computing step for computing the average brightness of an image displayed in accordance with said input picture signals;

an illuminance detecting step for detecting an ambient illuminance of said plasma display panel;

a first brightness limiting step for converting to an application frequency for said displaying pulse that makes said average brightness lower as said average brightness becomes higher;

a second brightness limiting step for converting to said application frequency that makes said average brightness lower as said average brightness becomes higher such that said application frequency obtained for said average brightness becomes smaller than in said first brightness limiting step; and

a driving step for applying said displaying pulse to each of said discharge cells in accordance with said application frequency obtained by said first brightness limiting step when said illuminance is relatively high, and, conversely, for applying said displaying pulse to each of said discharge cells in accordance with said application frequency obtained by said second brightness limiting step when said illuminance is relatively low.

18. A plasma display panel driving device for carrying out a display corresponding to input picture signals by causing a discharge to occur by repeatedly applying displaying pulses to each of said discharge cells of a plasma display panel comprising a plurality of discharge cells supporting display pixels, comprising:

average brightness computing means for computing the average brightness of an image displayed in accordance with said input picture signals;

illuminance detecting means for detecting an ambient illuminance of said plasma display panel; and

driving means for computing the application frequency of said displaying pulse to be applied using a conversion



function, which has said average brightness and said illuminance as parameters, and for applying said displaying pulse to each of said discharge cells in accordance with said application frequency.

19. The plasma display panel driving device according to Claim 18, wherein said conversion function is expressed by superimposing a first conversion function for converting to said application frequency that makes said average brightness lower as said average brightness becomes higher, and a second conversion function for making said application frequency as small as said illuminance is low.

20. The plasma display panel driving device according to Claim 18, wherein the computing of said application frequency is carried out each frame period of said input picture signal.

21. The plasma display panel driving method according to Claim 18, wherein said conversion function achieves a fixed value said application frequency in a range in which said average brightness is lower than a prescribed brightness level.

22. The plasma display panel driving method according to Claim 21, wherein said prescribed brightness level becomes smaller as said illuminance becomes smaller.

23. A plasma display panel driving device for carrying out a display corresponding to input picture signals by causing a discharge to occur by repeatedly applying displaying pulses to each of said discharge cells of a plasma display panel

comprising a plurality of discharge cells supporting display pixels, comprising:

average brightness computing means for computing the average brightness of an image displayed in accordance with said input picture signals;

illuminance detecting means for detecting an ambient illuminance of said plasma display panel;

first brightness limiting means for converting to an application frequency for said displaying pulse that makes said average brightness lower as said average brightness becomes higher;

second brightness limiting means for converting to said application frequency for said displaying pulse that makes said average brightness lower as said average brightness becomes higher such that said application frequency obtained for said average brightness becomes smaller than that by said first brightness limiting means; and

driving for applying said displaying pulse to each of said discharge cells in accordance with said application frequency obtained by said first brightness limiting means when said illuminance is relatively high, and, conversely, for applying said displaying pulse to each of said discharge cells in accordance with said application frequency obtained by said second brightness limiting means when said illuminance is relatively low.